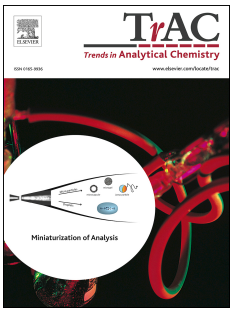
Accepted Manuscript



Multi-channel capillaries and photonic crystal fibres for separation sciences

Sinéad Currivan, Nirved Upadhyay, Brett Paull

PII: S0165-9936(17)30419-3

DOI: 10.1016/j.trac.2018.03.008

Reference: TRAC 15117

To appear in: *Trends in Analytical Chemistry*

Received Date: 18 October 2017

Revised Date: 26 February 2018

Accepted Date: 9 March 2018

Please cite this article as: S. Currivan, N. Upadhyay, B. Paull, Multi-channel capillaries and photonic crystal fibres for separation sciences, *Trends in Analytical Chemistry* (2018), doi: 10.1016/j.trac.2018.03.008.

Multi-channel capillaries and photonic crystal fibres for separation sciences

Sinéad Currivan[1]*, Nirved Upadhyay[1], Brett Paull[1,2].

1. Australian Centre for Research on Separation Science, School of Physical Sciences, University of Tasmania, Sandy Bay, Hobart, Tasmania, Australia.
2. ARC Industrial Training Centre for Portable Analytical Separation Technologies (ASTech), School of Physical Sciences, University of Tasmania, Sandy Bay, Hobart, Tasmania, Australia.

*corresponding author; sinead.currivan@utas.edu.au

Keywords: photonic crystal fibres, multi-channel capillary, modification, polymer, Raman, SERS, separations.

Highlights:

- Synopsis of applications of PCFs
- Summary of modification reactions performed on PCFs
- Discussion of the potential of PCFs in separation sciences
- Role of PCF type and geometry for analytical sciences discussed

List of abbreviations: ACN acetonitrile, APTES (3-aminopropyl) triethoxysilane, CE capillary electrophoresis, COC cyclic olefin copolymer, CNT carbon nanotube, α-CRP C reactive protein, CTMS chlorotrimethylsilane, DVB divinyl benzene, EDC 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide.HCl, EDMA ethyleneglycol dimethacrylate, EGFR Epidermal Growth Factor Receptor, GC gas chromatography, γ-maps 3-(trimethoxysilyl) propyl methacrylate, HCl hydrochloric acid, HC-PCF hollow core PCF, HRP horseradish peroxidase, LC liquid chromatography, MLC multi-lumen capillary, MCF multi-channelled fibre, MOF multi-structured optical fibre, M_r molecular weight, MS mass spectrometry, MSW microstructured waveguide, NHS N-hydroxysuccinimide, PAH polycyclic aromatic hydrocarbon, PCR polymerase chain reaction, PMMA poly(methyl methacrylic acid), PDMS poly(dimethoxysilane), PCF photonic crystal fibre, PLOT porous layer open tubular, PSDVB poly(styrene-*co*-divinyl benzene), PBS phosphate buffered saline, SC-PCF solid core PCF, SERS surface enhanced Raman spectroscopy, SPR Surface plasmon resonance.